

NATIONAL WEATHER SERVICE INSTRUCTION 10-1202

MARCH 25, 2008

***Operations and Services
Drought Services, NWSPD 10-12***

NATIONAL DROUGHT PRODUCTS

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives>

OPR: W/OS4 (M. Berger)

Certified by: W/OS4 (F. Horsfall)

Type of Issuance: Initial

SUMMARY: This is a new instruction that incorporates all the national Drought products from previous versions of NWS I 10-1001 (Climate Outlooks) and NWS I 10-1002 (Climate Monitoring).

All drought products remain unchanged.

(signed) _____ March 11, 2008
David B. Caldwell date
Director, Office of Climate,
Water, and Weather Services

<u>Table of Contents:</u>		<u>Page</u>
1.	Introduction.....	4
2.	Palmer Drought Severity Index (Contiguous U.S.)	4
2.1	Mission Connection	4
2.2	Issuance Guidelines	4
2.2.1	Creation Software	4
2.2.2	Issuance Criteria	4
2.2.3	Issuance Time	4
2.2.4	Valid Time	4
2.2.5	Product Expiration Time.....	4
2.3	Technical Description	4
2.3.1	Content	4
2.3.2	Format	4
2.4	Updates, Amendments, and Corrections.....	5
3.	U.S. Drought Monitor (Contiguous U.S., Alaska, and Hawaii)	5
3.1	Mission Connection	5
3.2	Issuance Guidelines	5
3.2.1	Creation Software	5
3.2.2	Issuance Criteria	6
3.2.3	Issuance Time	6
3.2.4	Valid Time	6
3.2.5	Product Expiration Time.....	6
3.3	Technical Description	6
3.3.1	Content	6
3.3.2	Format	6
3.4	Updates, Amendments, and Corrections.....	8
4.	National Drought Summary (Contiguous U.S., Alaska, and Hawaii)	9
4.1	Mission Connection	9
4.2	Issuance Guidelines	9
4.2.1	Creation Software	9
4.2.2	Issuance Criteria	9
4.2.3	Issuance Time	9
4.2.4	Valid Time	9
4.2.5	Product Expiration Time.....	9
4.3	Technical Description	9
4.3.1	Mass News Disseminator Header	9
4.3.2	Content	9
4.3.3	Format	9
4.4	Updates, Amendments, and Corrections.....	10

Table of Contents:

Page

5.	U.S. Drought Outlook (Contiguous U.S., Alaska, and Hawaii)	10
5.1	Mission Connection	10
5.2	Issuance Guidelines	10
5.2.1	Creation Software	10
5.2.2	Issuance Criteria	10
5.2.3	Issuance Time	10
5.2.4	Valid Time	10
5.2.5	Product Expiration Time.....	10
5.3	Technical Description	10
5.3.1	Content	10
5.3.2	Format	10
5.4	Updates, Amendments, and Corrections.....	11
6.	U.S. Drought Outlook Discussion (Contiguous U.S., Alaska, and Hawaii).....	11
6.1	Mission Connection	11
6.2	Issuance Guidelines	11
6.2.1	Creation Software	11
6.2.2	Issuance Criteria	11
6.2.3	Issuance Time	11
6.2.4	Valid Time	12
6.2.5	Product Expiration Time.....	12
6.3	Technical Description	12
6.3.1	Mass News Disseminator Header	12
6.3.2	Content	12
6.3.3	Format	12
6.4	Updates, Amendments, and Corrections.....	12

1. Introduction. This instructional directive describes the narrative and graphical climate monitoring drought products issued by the National Weather Service's (NWS) Climate Prediction Center (CPC). Product World Meteorological Organization (WMO) headings and Advanced Weather Interactive Processing System (AWIPS) identifiers are listed (if available) for NWS dissemination systems. All products are available or linked through <http://www.cpc.ncep.noaa.gov> on the internet unless indicated otherwise.

2. Palmer Drought Severity Index (Contiguous U.S.). Internet issuance only. There is no WMO heading or AWIPS ID.

2.1 Mission Connection. The Palmer Drought Severity Index is prepared by [Joint Agricultural Weather Facility \(JAWF\)](#), located at the U.S Department of Agriculture (USDA). CPC is represented at JAWF and helps prepares the product for long-term planning by agricultural and water supply managers.

2.2 Issuance Guidelines.

2.2.1 Creation Software. JAWF uses in-house National Center of Atmospheric Research graphics.

2.2.2 Issuance Criteria. This is a scheduled product.

2.2.3 Issuance Time. JAWF issues this product each Monday at around 12:00 noon Eastern local time.

2.2.4 Valid Time. This product is valid for one week after issuance.

2.2.5 Product Expiration Time. This product expires with the next issuance one week later.

2.3 Technical Description. JAWF will follow the format and content described in this section.

2.3.1 Content. The index depicts prolonged (several months to several years) abnormal dryness or wetness; responds slowly; changes little from week to week; and reflects long-term moisture runoff, recharge, and deep percolation, as well as evapotranspiration.

2.3.2 Format. JAWF assigns numerical index values for each [National Climatic Data Center \(NCDC\)](#) climate data division.

Drought Severity Index by Division
Weekly Value for Period Ending 27 JUL 2002
Long Term Palmer

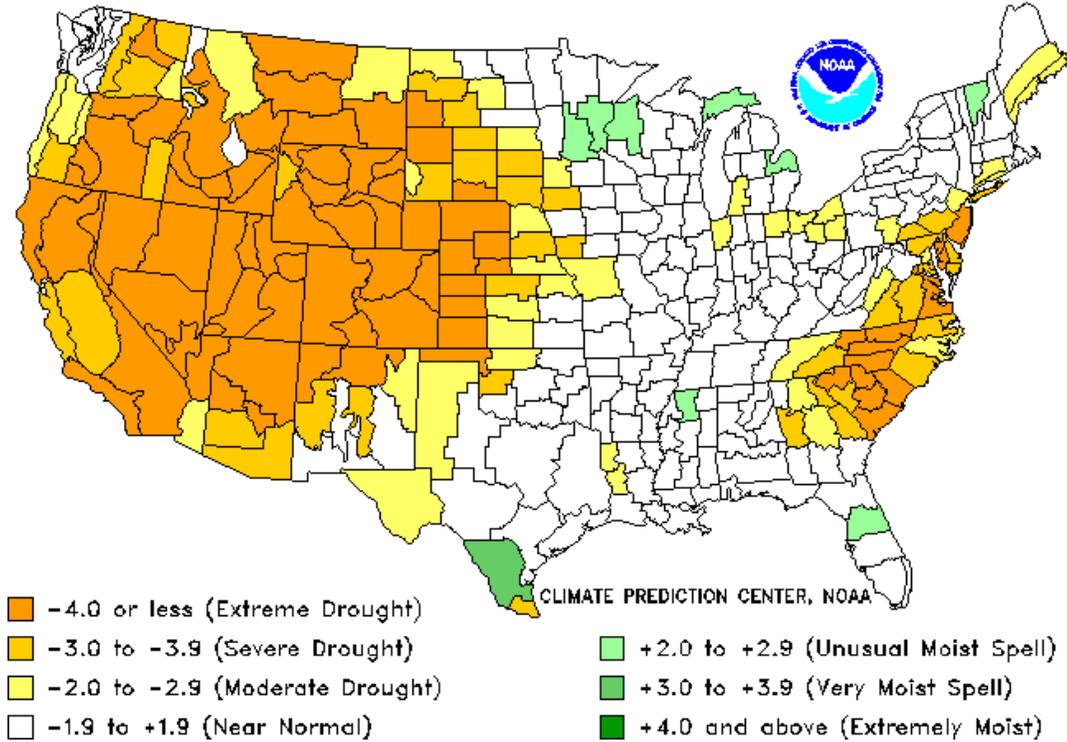


Figure 1. Palmer Drought Severity Index for week ending July 27, 2002.

2.4 Updates, Amendments, and Corrections. JAWF does not issue updates or amendments. They will issue corrections as needed.

3. U.S. Drought Monitor (Contiguous U.S., Alaska, and Hawaii).
WMO Heading - PYIA88 KWNC; AWIPS ID - RBGDRO

3.1 Mission Connection. This product is primarily intended for agricultural and water supply interests. CPC, NOAA's NCDC, USDA's JAWF, and the University of Nebraska's [National Drought Mitigation Center \(NDMC\)](#) issue this product with lead responsibility rotating among this "team."

3.2 Issuance Guidelines.

3.2.1 Creation Software. The team uses ArcGIS (geographic information system) for personal computers.

3.2.2 Issuance Criteria. These are scheduled products.

3.2.3 Issuance Time. The team issues this product every Thursday at 8:30 a.m. Eastern local time except if Thursday is a Federal Holiday. In the case of a Thursday holiday, the team will issue the product the Wednesday before the Thursday Holiday at 8:30 a.m. Eastern local time.

3.2.4 Valid Time. This product is valid as of 1200 Universal Coordinated Time (UTC) on the Tuesday prior to issuance until 1200 UTC the following Tuesday.

3.2.5 Product Expiration Time. This product expires with the next issuance one week later.

3.3 Technical Description. The team will follow the format and content described in this section.

3.3.1 Content. The team summarizes the extent and intensity of large scale drought nationwide.

3.3.2 Format. The team uses a classification system to determine drought intensity and type analogous to the schemes for hurricanes and tornadoes. They combine key indices of rainfall and drought as well as local impact reports and expertise to produce the final drought intensity rating. Since drought often affects various activities differently, the team encloses areas on a map with solid black lines where drought is affecting agriculture (A), and hydrological (H) activities disproportionately. Drought areas not enclosed by a black line are experiencing both impact types to a similar degree.

Drought Severity Classification: The team bases the drought intensity classes on six key indicators and numerous supplementary indicators. The map's drought severity classification table shows the ranges for each indicator for each dryness level. Because the ranges of the various indicators often do not coincide, the team bases the final drought category on what the majority of the indicators show. The team also weighs the indices according to how well they perform in various parts of the country and at different times of the year. The team often needs additional indicators in the West, where winter snowfall has a strong bearing on water supplies.

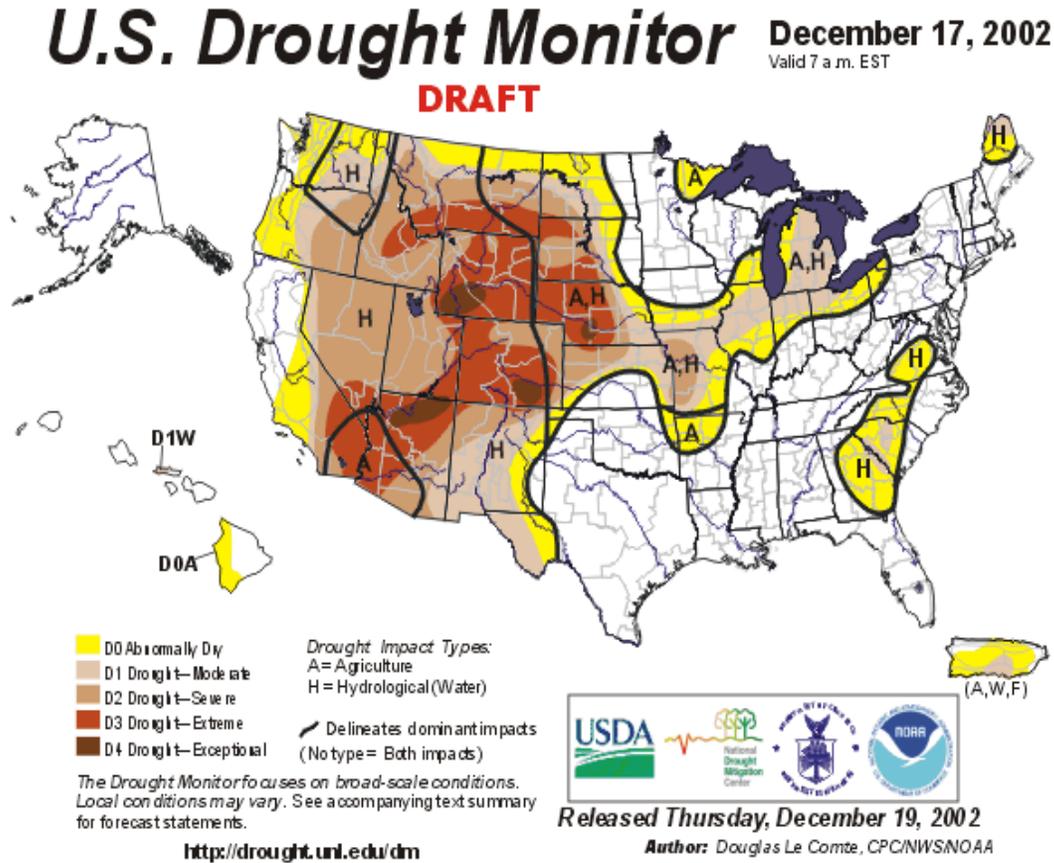


Figure 2. Example of U.S. Drought Monitor.

The team loosely defines the drought intensity classes, ranging from D0 to D4, by the frequency with which similar or drier conditions can be expected for the given location and season. The team approximates thresholds for the D0, D1, D2, D3, and D4 classifications by 30 percentile, 20 percentile, 10 percentile, 5 percentile, and 2 percentile occurrence frequencies, respectively. To make such assessments, the team uses a variety of drought indicators including derived indices, precipitation on various time scales, impact reports, and local expertise, with the final classification leaning toward those indicators which seem most relevant to observed impacts. The following table provides examples of indicators which independently meet the D0 to D4 criteria. However, the following indicators are not expressed as or based on percentiles (specifically, the Palmer Drought Index, Percent of Normal Precipitation, and Satellite Vegetative Health Index) representing the national average of conditions that meet the D0 to D4 thresholds. Thus, these thresholds used in practice vary dramatically with location and time of year.

D0 Abnormally Dry Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.

Palmer Drought Index	-1.0 to -1.9	Standard Precipitation Index	-0.5 to -0.7
Percent of Normal Precip.	<75% for 3 mo.	Satellite Vegetative Health Index	36-45
CPC Soil Moisture Model	21-30%		
U.S. Geological Survey			
(USGS) Weekly Streamflow	21-30%		

D1 Moderate Drought Moderate drought Some damage to crops, pastures; fire risk high; streams, reservoirs, or wells low; some water shortages developing or imminent; voluntary water use restrictions requested.

Palmer Drought Index	-2.0 to -2.9	Standard Precipitation Index	-0.8 to -1.2
Percent of Normal Precip	<70% for 3 mo.	Satellite Vegetative Health Index	26-35
CPC Soil Moisture Model	11-20%		
USGS Weekly Streamflow	11-20%		

D2 Severe Drought Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.

Palmer Drought Index	-3.0 to -3.9	Standard Precipitation Index	-1.3 to -1.5
Percent of Normal Precip	<65% for 6 mo.	Satellite Vegetative Health Index	16-25
CPC Soil Moisture Model	6-10%		
USGS Weekly Streamflow	6-10%		

D3 Extreme Drought Major crop or pasture losses; extreme fire danger; widespread water shortages or restrictions.

Palmer Drought Index	-4.0 to -5.4	Standard Precipitation Index	-1.6 to -1.9
Percent of Normal Precip	<60% for 6 mo.	Satellite Vegetative Health Index	6-15
CPC Soil Moisture Model	3-5%		
USGS Weekly Streamflow	3-5%		

D4 Exceptional Drought Exceptional and widespread crop or pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies.

Palmer Drought Index	-5.5 or less	Standard Precipitation Index	-2.0 or less
Percent of Normal Precip	<60% for 12 mo.	Satellite Vegetative Health Index	1-5
CPC Soil Moisture Model	0-2%		
USGS Weekly Streamflow	0-2%		

3.4 Updates, Amendments, and Corrections. The team does not issue updates or amendments. They will issue corrections as needed.

4. National Drought Summary (Contiguous U.S., Alaska, and Hawaii).
WMO heading - FXUS25 KWNC; AWIPS ID - PMDDRO

4.1 Mission Connection. This text product is used primarily by agricultural and water supply interests in short-term planning. CPC, NCDC, JAWF, and the NDMC jointly issue this product with lead responsibility rotating among this “team.”

4.2 Issuance Guidelines.

4.2.1 Creation Software. The team uses text editing.

4.2.2 Issuance Criteria. These are scheduled products.

4.2.3 Issuance Time. The team issues this product every Thursday at 8:30 a.m. Eastern local time except if Thursday is a Federal Holiday. In case of a Thursday holiday, the team will issue the product the Wednesday before the Thursday Holiday at 8:30 a.m. Eastern local time.

4.2.4 Valid Time. This product is valid as of 1200 UTC on the Tuesday prior to issuance until 1200 UTC the following Tuesday.

4.2.5 Product Expiration Time. This product expires with the next issuance one week later.

4.3 Technical Description. The team follows the format and content in this section.

4.3.1 Mass News Dissemination Header.

NATIONAL DROUGHT SUMMARY
(lead member of the team)

4.3.2 Content. The team issues this summary to accompany the U.S. Drought Monitor. The team describes the current status of and recent occurrences affecting drought across the country along with a national look ahead to weather conditions expected to affect drought areas during the ensuing 10 days.

4.3.3 Format. The following is a generic format.

NATIONAL DROUGHT SUMMARY
(lead member of the team)
830 AM day mo. 20--

(area of country)...(text)
(area of country)...(text)
etc. as needed
LOOKING AHEAD...(text)
\$\$

- 4.4 Updates, Amendments, and Corrections. The team does not issue updates or amendments. They will issue corrections as needed.
5. U.S. Drought Outlook (Contiguous U.S., Alaska, and Hawaii).
WMO heading - PMNV88 KWNC AWIPS ID - RBGDRK
- 5.1 Mission Connection. CPC issues the Drought Outlook for seasonal planning by agricultural, water supply, and fire weather managers.
- 5.2 Issuance Guidelines.
- 5.2.1 Creation Software. CPC will use GEMPAK software as an input into NAWIPS.
- 5.2.2 Issuance Criteria. This is a scheduled product.
- 5.2.3 Issuance Time. CPC issues this product at 8:30 a.m. Eastern Local time on the third Thursday of the month. This issuance is simultaneous with the One-Month and Three-Month Outlooks.
- 5.2.4 Valid Time. The discussions are valid for the remainder of the month plus either the next three months for scheduled issuances or next two months for updates.
- 5.2.5 Product Expiration Time. The outlook expires when the next outlook is issued.
- 5.3 Technical Description. CPC will follow the format and content described in this section.
- 5.3.1 Content. CPC depicts general large-scale trends based on subjectively derived probabilities guided by numerous indicators, including short and long range statistical and dynamic forecasts. CPC indicates predicted trends for ongoing drought areas depicted in the U.S. Drought Monitor as well as possible areas of new droughts that may develop.
- 5.3.2 Format. CPC uses 4 categories to depict expected drought conditions, as indicated in the key of Figure 3 (lower left). The 5th category in white is for no drought expected.

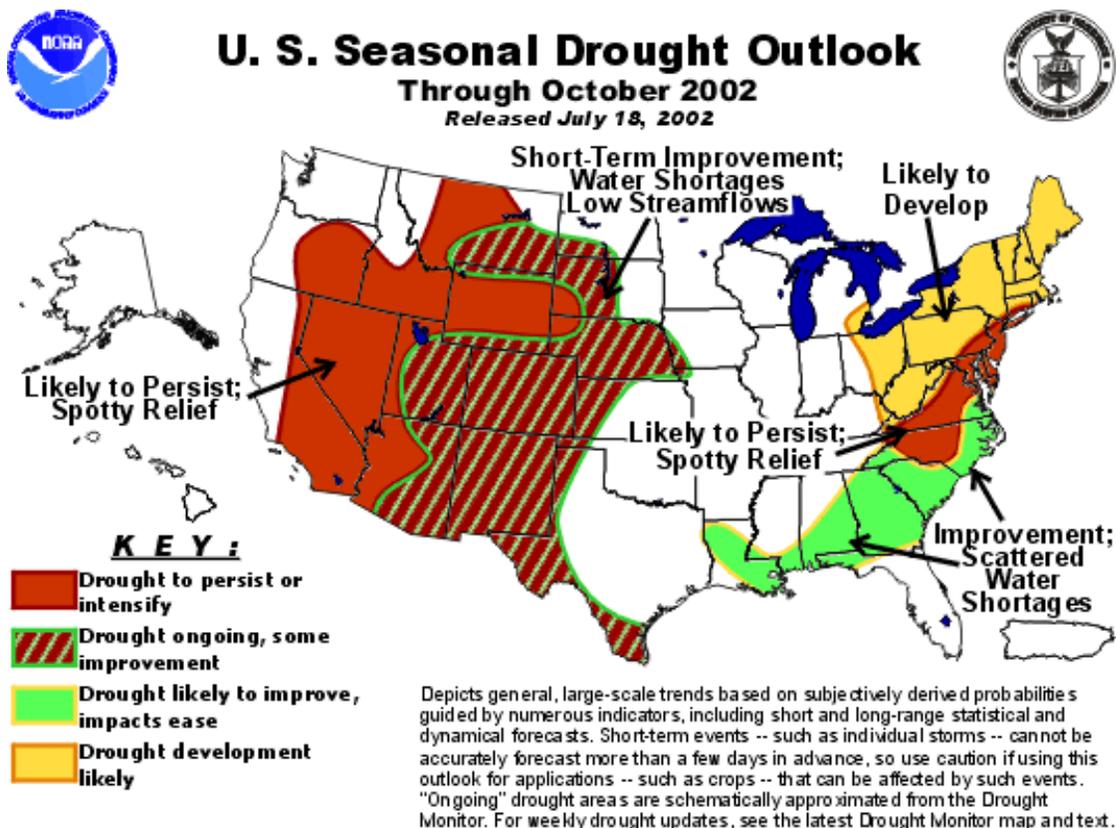


Figure 3. U.S. Drought Outlook issued on the third Thursday in July 2002.

- 5.4 Updates, Amendments and Corrections. CPC will issue updates or corrections as needed.
- 6. U.S. Drought Outlook Discussion (Contiguous U.S., Alaska, and Hawaii). (WMO heading FXUS22 KWNC - AWIPS ID PMDDRK)
 - 6.1 Mission Connection. CPC issues the Drought Outlook Discussion for seasonal planning by agricultural, water supply, and fire weather managers.
 - 6.2 Issuance Guidelines.
 - 6.2.1 Creation Software. CPC uses a text editor.
 - 6.2.2 Issuance Criteria. This is a scheduled product.
 - 6.2.3 Issuance Time. CPC issues this discussion at 8:30 a.m. Eastern Local time on the third Thursday of the month. This issuance is simultaneous with the One-Month and Three-Month Outlooks and related discussions.

6.2.4 Valid Time. The discussions are valid for the remainder of the month plus either the next three months for scheduled issuances or next two months for updates.

6.2.5 Product Expiration Time. The discussion expires when the next outlook is issued.

6.3 Technical Description. CPC will follow the format and content described in this section.

6.3.1 Mass News Disseminator Header

U.S. DROUGHT OUTLOOK DISCUSSION
NWS CLIMATE PREDICTION CENTER CAMP SPRINGS MD

6.3.2 Content. CPC provides an accompanying prognostic discussion detailing the atmospheric, hydrologic, and climatic conditions affecting the trends of drought area. CPC will include an explanation of the rationale behind the outlooks with a discussion of the weights given to various tools used in the outlook and the confidence in those tools. CPC should highlight the reasoning behind monthly changes in Drought Outlook conditions.

6.3.3 Format. The following is a generic format.

U.S. DROUGHT OUTLOOK DISCUSSION
NWS CLIMATE PREDICTION CENTER CAMP SPRINGS MD
300 PM E-T THU mon # 20--

(text)
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6.4 Updates, Amendments, and Corrections. CPC will issue updates or corrections as needed.